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FIXED POINT THEOREMS FOR RATIONAL CONTRACTION MAPPING IN CONE b-METRIC SPACES

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Abstract: In this paper, we prove some fixed point theorems for contraction mappings in cone b-metric spaces. Dass-Gupta [6], Jaggi-Dass [16], Jaggi [17], M.S. Khan [18] and others proved theorems for different spaces using rational function and contraction conditions. Inspiring from above results, we proved theorems in cone b-metric spaces.

Keywords and Phrases: Fixed point, Cone Metric Spaces, Complete Cone Metric Spaces, Cone b-Metric Spaces.

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1. Introduction

Banach's contraction principle is one of the pivotal results in functional analysis. Let (X, d) be a complete metric space and mapping $T : X \to X$ is such that

$$d(Tx, Ty) \leq kd(x, y) \quad \forall x, y \in X \quad \text{where} \quad k \in [01)$$

Then T has a fixed point $x' \in X$.
Fixed point theory plays a basic role in application of many branches of mathematics. Finding a fixed point of contractive mapping becomes the center of strong research activity. There are many works about the fixed point of contractive maps